

COPPERMINE BOOSTS CELERON TO 600MHz

By Keith Diefendorff {4/3/00-09}

Intel is putting frequency distance between it and rival AMD by upping the frequencies of its desktop Celerons from 533MHz to 566MHz and 600MHz. The new Celeron processors are based on the same 0.18-micron Coppermine die that Intel uses for Pentium III, but the

Celeron version uses only half of the chip's 256K of on-chip L2 cache and limits bus speed to half that of Pentium III. But with Coppermine at its core, the only limits on Celeron frequencies are those that Intel imposes on itself to maintain marketing distance from Pentium IIIs.

Intel's move puts tremendous pressure on AMD. With the K6-2/550 (see [MPR 3/6/00-03](#), "K6-2 550MHz 'Value' Speed Leader") already stressing AMD's 0.25-micron process to the limits of manufacturability, we doubt that a shrink to 0.18 micron will offer much frequency relief. As a result, AMD is left with no response in the value segment until the cost-reduced Athlon Spitfire, with on-chip L2 cache, arrives later in the second quarter. Also, since the new Celerons have SSE, we expect more software vendors to shift their focus away from 3DNow.

Intel, for marketing reasons, no longer reports SPEC scores for Celeron processors. But on the basis of Ziff-Davis's CPUmark 99, the higher speed of Coppermine's L2 cache

and the 6% frequency boost from 533MHz to 566MHz will increase Celeron's integer performance by 7.5%, and the 600MHz part will gain another 3.5%. The new speed grades will continue to operate at a bus speed of only 66MHz but are the first Celeron processors to be offered in Intel's new flip-chip version of the Socket 370 PGA.

Although Intel could have shaved some die area by designing a special Celeron version of Coppermine, using the same die that it also uses in the low-end of its Xeon line and throughout the Pentium III line gives the company more flexibility. Intel says that the economy of scale it gains from this approach more than offsets the cost of the die area for the unused 128K of L2 cache, lowering overall manufacturing costs.

In quantities of 1,000 units, the 566MHz Celeron has a list price of \$167, while the 600MHz part costs \$181. The prices of the 466-, 500-, and 533MHz Celerons were not affected. ♦

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